

**DIVISION 13 - SPECIAL CONSTRUCTION**  
**SECTION 13281 - ABATEMENT OF ASBESTOS-CONTAINING MATERIALS**

**PART 1 - GENERAL**

1.01 GENERAL REQUIREMENTS

As Specified in Section 01001.

1.02 SUMMARY

- A. The work covered by this section includes the handling, removal and control of asbestos containing materials (ACM) including procedures and equipment required to protect workers, the environment and the general public from contact with airborne asbestos fibers. The work also includes the disposal of any ACM generated by the work.
- B. For work described in this section, the Contractor shall furnish all labor, materials, equipment, tools and any other resources necessary to complete the work in accordance with regulatory requirements and project contract documents, using best available technology and industry standard methods and procedures.
- C. The work includes the demolition and removal of ACM, prior to building renovation demolition, as noted below. The Contractor is responsible for verifying quantities.
- D. Asbestos was detected or assumed to be in concentrations exceeding one percent in the following materials listed below. If materials are found during the demolition which were not sampled, such materials should be assumed to be ACM until appropriate testing proves otherwise.
  - 1. Thermal System Insulation (TSI) – pipe insulation straight runs (on 0-2 inch lines and 2-4 inch lines) and associated mudded fittings throughout building. Approximately 3,725 linear feet (LF) of insulation and approximately 250 LF and 10 mudded fittings.
  - 2. Black 9"x9" floor tiles throughout 1<sup>st</sup>, 2<sup>nd</sup>, and 4<sup>th</sup> floors. Approximately 21,500 square feet (SF).
  - 3. Tan 6"x6" floor tiles throughout 3<sup>rd</sup> floor. Approximately 9,600 SF.
  - 4. Approximately 9 Dust Cloth Isolation Joints (various locations as identified in attached Hazardous Materials Survey).
  - 5. Approximately 25 SF (275 window units) of exterior window frame caulk.
  - 6. Approximately 5 SF (6 doors) of exterior door frame caulk.
  - 7. Approximately 8 fire doors and frames.
  - 8. Approximately 8 old electrical panels.
  - 9. Approximately 3 cubic yards (CY) of piping insulation debris that has become mixed with other building component debris.

E. Related Work Described Elsewhere:

1. Section 13282 – SUBSTRATES WITH LEAD CONTAINING PAINTS
2. Section 13284 – PCB BALLASTS AND MERCURY LAMPS
3. Section 13285 – HOUSEHOLD APPLIANCES THAT USE REFRIGERANTS

1.03 REQUIREMENTS

- A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to work practices, protection of workers, authorized visitors to the site, and property adjacent to the work.
- B. All work shall be performed in strict accordance with all governing codes, rules, and regulations. Where conflicts occur the more stringent requirement shall apply.
- C. Working hours shall be as required and approved by the Owner. The Contractor shall coordinate and schedule all work with the Owner.
- D. Perform asbestos related work in accordance with the following:
  1. Michigan Public Act (MPA) 154 of 1974 "Michigan Occupational Safety and Health Act"
  2. MPA 135 of 1986 "Asbestos Abatement Contractors Licensing Act"
  3. MPA 440 of 1988 "Asbestos Workers Accreditation Act"
  4. OSHA 29 CFR 1926.1101 "Asbestos Standard for Construction"
  5. OSHA 29 CFR 1910.1001 "Asbestos Standard for General Industry"
  6. 40 CFR 61-SUBPART M National Emission Standard for Asbestos
  7. 40 CFR 763 Asbestos Hazard Emergency Response Act

1.04 DEFINITIONS

- A. Amended water means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.
- B. Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, "asbestos" includes PACM, as defined below.
- C. Asbestos-containing material (ACM) means any material containing more than one percent asbestos.
- D. Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas.

- E. Class I asbestos work means activities involving the removal of TSI and surfacing ACM and PACM.
- F. Class II asbestos work means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
- G. Class III asbestos work means repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, is likely to be disturbed.
- H. Class IV asbestos work means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.
- I. Clean room means an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.
- J. Competent person means, in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f) in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2).
- K. Critical barrier means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.
- L. Decontamination area means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos
- M. Demolition means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.
- N. Disturbance means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.
- O. Employee exposure means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
- P. Equipment room (change room) means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

- Q. Fiber means a particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.
- R. Friable asbestos-containing material (ACM), is defined by the Asbestos NESHAP, as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. These include sprayed-on or troweled-on fireproofing, acoustic ceiling material and ceiling tiles, linoleum backing, thermal system insulation, non-asphalt-saturated roofing felts, asbestos-containing paper, and joint compound. ACM that has been rendered to a crumbled, pulverized, or powdered state, when dry, by crushing, sanding, sawing, shot-blasting, or other demolition or renovation techniques is friable, which include category I nonfriable asbestos containing material. ACM, in which the asbestos fibers are bound into a matrix that has been rendered to a crumbled, pulverized, or powdered state, when dry, by crushing, sanding, sawing, shotblasting, severe weathering, or other demolition or renovation techniques is friable, which include category II nonfriable ACM.
- S. High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
- T. Industrial hygienist means a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.
- U. Intact means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.
- V. Modification means a changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system.
- W. Negative Exposure Assessment means a demonstration by the employer that employee exposure during an operation is expected to be consistently below the PELs.
- X. Non-friable ACM is any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. EPA also defines two categories of non-friable ACM, Category I and Category II non-friable ACM, which are described later in this guidance.
- Y. Presumed Asbestos Containing Material means thermal system insulation and surfacing material found in buildings constructed no later than 1980.
- Z. Project Designer means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. Sec. 763.90(g).
  - AA. Regulated area means an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of

asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

- BB. Regulated Asbestos-Containing Material (RACM) is (a) friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.
- CC. Removal means all operations where ACM and/or PACM is taken out or stripped from structures or substrates, and includes demolition operations.
- DD. Renovation means the modifying of any existing structure, or portion thereof.
- EE. Repair means overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.
- FF. Surfacing material means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).
- GG. Surfacing ACM means surfacing material which contains more than 1% asbestos.
- HH. Thermal system insulation (TSI) means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.
- II. Thermal system insulation ACM is thermal system insulation which contains more than 1% asbestos.
- JJ. Third Party Consultant is a qualified consultant, hired by the Owner to perform duties as specified in this Section. The consultant shall provide personnel who possess current certification by the State of Michigan Asbestos Certification program as Inspector, Project Designer, Contractor/Supervisor and Project Monitor disciplines as needed.

## 1.05 SUBMITTALS

- A. Submit in accordance with Section 01300 - SUBMITTALS.
- B. Pre-Work Submittals:
  - 1. Asbestos Removal Work Plan: Submit a detailed plan of the engineering controls, work practices and safety procedures to be used during removal of asbestos containing materials. The plan shall include but is not limited to site security, schedule, personal protective equipment, location of regulated work areas, equipment storage and staging areas, showers, change rooms, removal methods, work practices, interface with other trades, sequencing of asbestos removal work, disposal plan, materials/products to be used, locations of local exhaust units, and personal air sampling protocols. The work plan must be

prepared by a State of Michigan licensed Asbestos Project Designer, as necessary.

2. Contractor's License: Submit the current contractor license for asbestos abatement within the State of Michigan.
  3. Project Supervisor Documentation: Submit the name and qualifications of the person(s) designated to act as the Contractor's Project Supervisor.
  4. Worker's Certification/Licenses: Submit the names and certification documentation of the persons who will be working at the project.
- C. The following submittals, documentation, and postings shall be maintained on site by the Contractor during abatement activities:
1. Asbestos worker and contractor/supervisor certification cards for each person employed in the removal, handling, or disturbance of asbestos.
  2. Personal air monitoring results
  3. Project documents (specifications and drawings)
  4. Applicable regulations including MPA 154 and 29 CFR 1926.1101
  5. Material Safety Data Sheets of supplies/chemicals used on the project
  6. Approved Asbestos Removal Work Plan
  7. Asbestos Survey Report
  8. List of emergency telephone numbers
  9. Project Supervisor Daily Log
  10. Waste Disposal Documents

#### 1.06 PRE-CONSTRUCTION CONFERENCE

- A. Prior to start of preparatory work under this Contract, the Contractor shall attend a pre-construction conference.
- B. Agenda for this conference shall include but not necessarily be limited to:
  1. Contractor's Asbestos Removal Work Plan
  2. Third Party Consultant's duties and functions
  3. Contractor's work procedures including:
    - a. Methods of job site preparation and removal methods
    - b. Respiratory protection and Personal Protective Equipment (PPE)
    - c. Disposal procedures
    - d. Cleanup procedures
    - e. Fire exits and emergency procedures
  4. Contractor's plan for twenty-four (24) hour project security both for prevention of theft and for barring entry of unauthorized personnel into work areas.

5. Temporary utilities
6. Storage of removed ACM
7. Waste disposal requirements and procedures

#### 1.07 NOTIFICATIONS

- A. The Contractor shall provide a 10-day project notification to the Department of Licensing and Regulatory Affairs (LARA) Asbestos Program for projects exceeding 10 linear feet or 15 square feet, or both, of friable asbestos materials.
- B. The Contractor shall maintain copies of notices, and provide proof of delivery and receipt.
- C. The Contractor shall be responsible for maintaining current and accurate project filings with regulatory agencies for the duration of the project.

#### 1.08 THIRD-PARTY CONSULTANT

- A. The Owner shall engage the services of a Third-Party Consultant who shall serve as the Owner's representative in regard to the performance of the asbestos abatement work and provide direction as required throughout the entire abatement project period.
- B. The Contractor is required to ensure cooperation of its personnel with the Third-Party Consultant for the air sampling and project monitoring functions described in this section. The Contractor shall comply with all direction given by the Third Party Consultant's personnel during the course of the work.
- C. The Third Party Consultant shall staff the project with trained and certified person(s) to act on the Owner's behalf at the job site and help ensure that the asbestos abatement is completed per the requirements of all applicable regulations and this section. Personnel working for the Third-Party Consultant shall be designated as the Abatement Project Monitor (APM) and shall hold current certification from the State of Michigan Asbestos Certification program as a Project Monitor, as necessary.
  1. The APM shall be on-site at all times the Contractor is on-site. The Contractor shall not be permitted to conduct any work unless the APM is on-site (except for inspection of barriers and negative air system during non-working days).
  2. The APM shall have the authority to direct the actions of the Contractor verbally and in writing to ensure compliance with the project documents and all regulations. The APM shall have the authority to stop work when gross work practice deficiencies or unsafe practices are observed, or when ambient fiber concentrations outside the removal area exceed 0.01 fibers per cubic centimeter or background level.
  3. The APM shall provide the following services:
    - a. Inspection of the Contractor's work, practices, and procedures, including temporary protection requirements, for compliance with all regulations and project specifications.

- b. Completion of project air sampling as required, including background, area and clearance air sampling. Personal air sampling will be the responsibility of the Contractor.
  - c. Verify daily that all workers used in the performance of the work are certified.
  - d. Monitor the progress of the Contractor's work, and report any deviations from the schedule to the Owner.
  - e. Monitor, verify, and document waste load-out operations.
  - f. Ensure that the Contractor is performing personal air monitoring daily, or until a Negative Exposure Assessment is verified, and that results are being returned and posted at the site as required.
  - g. The APM shall maintain a log on site that documents project related actions, activities, and occurrences.
4. The following minimum inspections shall be conducted by the APM. Additional inspections shall be conducted as required by work conditions. Progression from one phase of work to the next by the Contractor is only permitted with the approval of the APM.
- a. Pre-Construction Inspection: The purpose of this inspection is to verify the existing conditions of the work areas and to document these conditions.
  - b. Pre-Abatement Inspection: The purpose of this inspection is to verify the integrity of each containment system prior to disturbance of any asbestos containing material. This inspection shall take place only after the work area is fully prepped for removal.
  - c. Work Inspection: The purpose of this inspection is to monitor the work practices and procedures employed during removal of ACM and to monitor the continued integrity of the containment system. Inspections within the removal areas shall be conducted by the APM during all preparation, removal, and cleaning activities.
  - d. Visual Clearance Inspection: The purpose of this inspection is to verify that all materials in the scope of work have been properly removed; no visible asbestos debris/residue remains; no pools of liquid or condensation remains; and all required cleanings are complete. This inspection shall be conducted before final air clearance testing.
  - e. Post-Clearance Inspection: The purpose of this inspection is to ensure the complete removal of ACM, including debris, from the work area after satisfactory final clearance sampling and removal of all isolation and critical barriers and equipment from the work area.

## 1.09 PROJECT SUPERVISOR

- A. The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:
  - 1. The Project Supervisor shall hold an AHERA certification as an Asbestos Contractor/Supervisor.
  - 2. The Project Supervisor shall meet the requirements of a "Competent Person" as defined by OSHA 1926.1101 and shall have a minimum of one year experience as a supervisor.
- B. The Project Supervisor shall be responsible for the performance of the work and shall represent the Contractor in all respects at the project site. The Supervisor shall be the primary point of contact for the Asbestos Project Monitor.

## 1.10 DELIVERY AND STORAGE

- A. Store all materials at the job site in a suitable and designated area.
  - 1. Store materials subject to deterioration or damage away from wet or damp surfaces and under cover.
  - 2. Protect materials from unintended contamination and theft.
  - 3. Storage areas shall be kept clean and organized.
- B. Remove damaged or deteriorated materials from the job site. Materials contaminated with asbestos shall be disposed of as asbestos waste.

## 1.11 TEMPORARY UTILITIES

- A. Shut down and lock out all electrical power to the asbestos work areas.
- B. Provide temporary electric service with Ground Fault Circuit Interrupters (GFCI) for all electric requirements within the asbestos work area.
- C. Provide temporary lighting with "weatherproof" fixtures for all work areas.
- D. Utilize domestic water service from Owner's existing system.

# PART 2 – PRODUCTS

## 2.01 MATERIALS

- A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description, with Material Safety Data Sheets (MSDS) as applicable.
- B. No damaged or deteriorated materials shall be used. If material becomes contaminated the material shall be decontaminated or disposed of as asbestos-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.

- C. Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating no less than six (6) mil thickness.
- D. Polyethylene disposable bags shall be no less than six (6) mils thick.
- E. A commercial grade duct tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.
- F. Any ladders, planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable Federal, State and local regulations.

## 2.02 TOOLS AND EQUIPMENT

- A. The Contractor shall provide tools and equipment that are suitable for asbestos related activities.
- B. HEPA vacuums shall be leak proof to the filter and conform to AIHA Z9.2 and UL 586 standards.
- C. The Contractor shall notify, in writing, the Owner of any rental equipment in use during work activities that the subject equipment is being used in an asbestos abatement project.

## PART 3 - EXECUTION

### 3.01 GENERAL WORK PRACTICES

- A. Install emergency exit signage and fire extinguishers throughout the work areas in accordance with OSHA construction standards.
- B. Use the following engineering controls and work practices for all asbestos abatement operations, regardless of measured exposure levels:
  - 1. Vacuum cleaners equipped with High Efficiency Particulate Air (HEPA) filters to collect all asbestos-containing dust and debris.
  - 2. Wet methods to control exposures during asbestos removal and clean-up.
  - 3. Prompt clean-up and disposal of asbestos-contaminated wastes and debris in leak-proof containers.
- C. Do not use any of the following equipment or work practices during asbestos abatement operations, regardless of measured exposure levels:
  - 1. High-speed abrasive disc saws not equipped with point-of-cut HEPA ventilation or HEPA filtered exhaust air enclosures.
  - 2. Blowing with compressed air to remove asbestos-containing materials.
  - 3. Dry sweeping, shoveling, or other dry methods to clean up asbestos-containing dust and debris.
  - 4. Employee rotation as a means of reducing employee exposure to asbestos.

- D. Protect adjacent areas, materials and surfaces from damage due to demolition operations, including but not necessarily limited to the following
  - 1. Water damage
  - 2. Dirt, dust and debris
  - 3. Abrasion
  - 4. Cuts and scratches
  - 5. Holes from fasteners for temporary barriers

### 3.02 RESPIRATORY PROTECTION

- A. Select respiratory protection based on the requirements of 29 CFR 1926.1101.
- B. HEPA respirator filters shall be approved by NIOSH and shall conform to the OSHA requirements in 29 CFR 1910.134 and 29 CFR 1926.1101.
- C. The Contractor shall provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the work day. Filters used with negative pressure air purifying respirators shall not be used any longer than one eight (8) hour work day.
- D. Any authorized visitor, worker, or supervisor found in the work area not wearing the required respiratory protection shall be removed from the project site.

### 3.03 PROTECTIVE CLOTHING

- A. Provide personnel with disposable protective whole body clothing, head coverings, gloves and foot coverings. Provide disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber for comfort, but shall not be used alone. Make sleeves secure at the wrists and make foot coverings secure at the ankles by the use of tape, or provide disposable coverings with elastic wrists or tops.
- B. Authorized visitors shall be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the work area.

### 3.04 SIGNS AND LABELS

- A. Provide warning signs and barrier tapes at all approaches to asbestos work areas. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area.
  - 1. Provide danger signs in vertical format conforming to 29 CFR 1926.1101, minimum 20" x 14" displaying the following legend.

DANGER  
ASBESTOS CANCER AND LUNG DISEASE  
HAZARD  
AUTHORIZED PERSONNEL ONLY  
RESPIRATORS AND PROTECTIVE CLOTHING  
ARE REQUIRED IN THIS AREA

2. Provide 3" wide OSHA-approved barrier tape printed with black lettered, "DANGER ASBESTOS REMOVAL". Locate barrier tape across all corridors, entrances and access routes to asbestos work area.
- B. Provide asbestos danger labels affixed to all asbestos materials, scrap, waste, debris and other products contaminated with asbestos.
  1. Provide asbestos danger labels of sufficient size to be clearly legible, displaying the following legend:

DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG DISEASE HAZARD

2. Provide the following asbestos labels, of sufficient size to be clearly legible, for display on waste containers (bags or drums) which will be used to transport asbestos contaminated material in accordance with United States Department of Transportation 49 CFR Parts 171 and 172 (Note: Include "RQ" for friable asbestos waste only.)

RQ, (WASTE) ASBESTOS, 9, NA2212, PGIII

3. Generator identification information shall be affixed or otherwise marked to each waste container indicating the following printed in indelible ink:

Generator Name  
Facility Name  
Facility Address

### 3.05 AIR SAMPLING

- A. Air samples shall be collected and analyzed by Phase Contrast Microscopy (PCM) according to NIOSH 7400 methods for background, personal, area and final clearance air sampling during asbestos removal or disturbance work.
- B. Analysis of air samples shall be conducted by a laboratory with current registration by the Michigan Department of Public Health for PCM analysis.
- C. Background Air Sampling: The APM shall perform appropriate background air monitoring prior to the start of asbestos abatement work in each work area.
- D. Personal Air Sampling:

1. The Contractor shall perform appropriate personal air monitoring in accordance with 29 CFR 1926.1101, every work shift in each work area during which abatement activities occur, unless an appropriate Negative Exposure Assessment determination has been made.
2. The Contractor shall conduct air sampling that is representative of both the 8-hour time weighted average and 30-minute short-term exposures to indicate compliance with the permissible exposure and excursion limits.

E. Area Air Sampling:

1. The APM shall perform appropriate area air monitoring during all asbestos abatement operations.
2. If the area air sampling results during any phase of the abatement project indicate airborne fiber levels greater than 0.01 fibers per cubic centimeter or the established background level, outside the regulated work area, work shall stop immediately and corrective measures shall be initiated. The Contractor shall bear the burden of any and all costs incurred by this delay.

F. Final Clearance Air Sampling:

1. The APM shall perform appropriate clearance air monitoring upon completion of asbestos abatement in each work area after the area has passed final visual inspection.
2. All clearance air samples shall be at or below 0.01 fibers per cubic centimeter as measured using PCM in order to achieve final clearance.

### 3.06 NON-FRIABLE ACM REMOVAL

A. Preparation of the Work Area:

1. Critical Barriers: Install critical barriers over each opening into the regulated area, except when the material is located on the exterior of the building. In such cases, establish a regulated area to prevent unauthorized access.
2. Protection of Surfaces and Objects: The following requirements are in addition to, not in lieu of, indicated work area sealing requirements. Cover the following surfaces and objects as follows:
  - a. Protect all surfaces beneath all removal activity. Remove moveable objects from the work area, and cover fixed objects with impermeable drop cloths or plastic sheeting with edges securely sealed with tape.
  - b. Fully pre-clean all covered surfaces with amended water and a HEPA vacuum.
3. The ACM shall be thoroughly wetted prior to and during the removal process.
4. The ACM should be removed as intact as possible. Manual methods shall be used.
5. Sanding the floor or related backing is not permitted.

6. Mechanical chipping of the non-friable asbestos containing material is prohibited, except when performed via a negative pressure enclosure method as defined in the following section.

### 3.07 FRIABLE ACM REMOVAL BY NEGATIVE PRESSURE ENCLOSURE METHOD

#### A. Preparation of the Work Area:

1. Critical Barriers: Install critical barriers over each opening into the regulated area. The following requirements are in addition to, not in lieu of, other indicated surface and object protection requirements:
  - a. Seal each opening between the work area and adjacent areas with not less than 2 layers of 6-mil polyethylene sheeting. Use an expanding-polyurethane foam gun to seal areas with large numbers of pipes, conduits and beams. Openings include, but are not necessarily limited to, windows, skylights, doorways, elevator hoist way openings, corridor entrances, drains, ducts, grills, grates, and diffusers.
2. Protection of Surfaces and Objects: The following requirements are in addition to, not in lieu of, indicated work area sealing requirements. Cover the following surfaces and objects as follows:
  - a. Protect all surfaces beneath all removal activity. Remove moveable objects from the work area, and cover fixed objects with impermeable drop cloths or plastic sheeting with edges securely sealed with tape.
  - b. Fully pre-clean all covered surfaces with amended water and a HEPA vacuum.
  - c. Cover walls with not less than 2 layers of 6-mil polyethylene sheeting.
  - d. Cover floors with not less than 2 layers of 6-mil polyethylene sheeting. Avoid seams where possible. If seams are necessary, overlap not less than 12 inches and tape joints. Extend sheeting 12 inches up the side walls leaving no seams at the wall and floor joint. Immediately repair punctures and leaks, and clean up seepage.
3. Pre-Cleaning: Do not use cleaning methods that raise dust, such as dry sweeping or using vacuum cleaners not equipped with HEPA filters. Do not disturb asbestos containing materials during pre-cleaning phases. Treat water removed from the enclosure as asbestos contaminated waste.
4. Install ground-fault circuit interrupters on each electrical circuit within the enclosure.
5. Construct a three-chambered decontamination facility that is adjacent to and connected to each regulated area, and that consists of an equipment room, a shower room, and a clean room in series. Secure the facility when not in use.
  - a. Supply the equipment room with properly labeled, impermeable bags and containers for the containment and disposal of contaminated protective equipment.

- b. Construct showers that comply with the requirements of 29 CFR 1910.141 (d) (3), with the shower room adjacent to both the equipment room and the clean room. Filter water waste and shower water through a 5 micron filter, or remove water from site as asbestos waste.
- 6. Employee Decontamination Facilities:
  - a. Access the work area only through an approved decontamination system. Lock or block other entrances. Seal emergency exits (for use during a fire or accident) with polyethylene sheeting and tape.
  - b. Seal the waste pass-out, except during the removal of asbestos waste from the enclosure.
  - c. Entrance to the Regulated Area: Employees shall enter the decontamination area through the clean room, remove and store clothing, and put on protective clothing and respiratory
    - d. protection before passing through to the equipment room.
  - e. Exit from the Regulated Area: Employees shall exit the regulated area by removing gross contamination and debris from their protective clothing. The clothing shall be removed and disposed of in the equipment room into labeled impermeable bags or containers. Employees shall then shower and enter the clean room before changing into street clothes.
- 7. Local Exhaust Ventilation: Maintain portable air filtration units with a HEPA filter in use during asbestos abatement operations requiring enclosures.
  - a. Exhaust directly to building exterior. Provide at least one backup portable HEPA air filtration unit. Start up ventilation units prior to initiating asbestos removal operations and run until the APM has approved their shut-down after cleaning, visual inspection, clearance air sampling and tear-down.
  - b. Direct air movement within the enclosure away from the employees' work area and toward the air filtration device.
  - c. Provide not less than 4 air changes per hour within the enclosure.
  - d. Within the enclosure, through the period of its use, maintain a pressure differential of not less than minus 0.02 water gage with respect to ambient conditions outside the enclosure. Provide continuous measurement of the pressure differential at each negative pressure enclosure.
- 8. Visually inspect the enclosure for breeches and smoke-test for leaks before work begins, and before the start of each work shift. Make all modifications to the enclosure prior to starting removal work.

B. Removal Work Practices:

- 1. Immediately preceding asbestos removal, apply a fine mist of water to the asbestos materials and the surrounding area. Keep surrounding areas wet by

spraying periodically with amended water. Maintain a high humidity environment to assist in fiber settling.

2. Remove asbestos material using two-person teams, on staging platforms, if necessary.
3. Remove the wet asbestos material as intact sections or components. Carefully lower the material to the floor or place directly into container. Never drop or throw asbestos material on the floor.
4. Once the asbestos material is at ground level, pack in labeled 6-mil polyethylene bags.
5. Use two sealed and labeled 6-mil thick bags for storage and transportation of asbestos waste. Standing water shall be in each bag.
6. Wrap large components removed intact in two layers of 6-mil polyethylene sheeting, label, and secure with tape for transport to the landfill. Comply with all wetting requirements.
7. Treat wires, hangers, steel bands, nails, screws, metal lath, tin sheeting, and similar sharp objects removed with asbestos material as asbestos waste.
8. Label containerized asbestos waste in accordance with OSHA, EPA, and Department of Transportation regulations, as follows:
  - a. Label each container with OSHA label that contains the following information:

DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID CREATING DUST  
CANCER AND LUNG  
DISEASE HAZARD

- b. Label each container with the Owner and Contractor names and addresses as required by NESHAP.
  - c. Label each container with Class 9 Label required by DOT and identify waste as "RQ, Asbestos NA 2212."
9. Remove containerized asbestos waste daily from site, or store on site in a locked or secured location until ready for final disposal. Obtain approval of Owner for the location of disposal containers. Outdoor waste containers shall be fully enclosed and locked. Mark vehicles used to transport waste during the loading and unloading of asbestos waste with a visible sign, as required.

### 3.08 WORK AREA DECONTAMINATION AND CLEARANCE PROCEDURES

- A. The Project Supervisor along with the APM shall inspect the entire work area for asbestos.
- B. If any suspect asbestos dust or debris is found, repeat final cleaning operation, until the visual inspection is satisfactory to the APM.

- C. After final visual clearance criteria have been achieved in the work areas, the APM will notify the Contractor to encapsulate all walls, floors, ceilings, other exposed surfaces, and decontamination facilities.
- D. Clearance air sampling will be completed by the APM after the encapsulant has dried.
- E. After abatement clearance is given by the APM, the Contractor may remove the containment, which shall be disposed of as ACM.

### 3.09 WASTE DISPOSAL

- A. All waste will be transported and disposed of in compliance with DOT requirements and all applicable Federal, State and local regulations. Disposal must occur at an acceptable landfill accompanied by a waste manifest.
- B. As soon as possible and no longer than thirty days after disposing of the waste, all completed waste manifests shall be submitted to Owner's Third Party Consultant.

END OF SECTION

## **SECTION 13282 - SUBSTRATES WITH LEAD CONTAINING PAINTS**

### **PART 1 - GENERAL**

#### **1.01 GENERAL REQUIREMENTS**

As specified in Section 01001.

#### **1.02 SUMMARY**

- A. The work covered by this section includes the handling and control of lead-containing paints (LCP) and describes some of the procedures and equipment required to protect workers, the environment and the general public from contact with lead dust during construction activities.
- B. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:
  - 1. Demolition or salvage of structures where lead or materials containing lead are present;
  - 2. Removal or encapsulation of materials containing lead;
  - 3. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;
  - 4. Installation of products containing lead;
  - 5. Lead contamination/emergency cleanup;
  - 6. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed, and
  - 7. Maintenance operations associated with the construction activities described in this paragraph.
- C. For work described in this section, the Contractor shall furnish all labor, materials, equipment, tools and any other resources necessary to complete the work in accordance with regulatory requirements and project contract documents, using best available technology and industry standard methods and procedures.
- D. The work includes the disturbance, removal or demolition of materials which are coated with LCP, during building renovation activities.
- E. Lead was detected in the following materials listed below:
  - 1. Beige and Yellow paint on plaster walls of Large Southwest Showroom – (1.9 percent lead)
  - 2. Blue and White paint on metal window of Garage – (0.36 percent lead)
  - 3. Green and Tan paint on plaster walls of Southeast Office North – (0.22 percent lead)
  - 4. Black paint on wood baseboard of Large Southwest Showroom – (0.33 percent lead)
  - 5. Beige, Green, and Yellow paint on plaster wall of Suite 219, South – (0.27 percent lead)

6. Light Brown, Green, and Tan paint on metal wall of West Center Office – (0.19 percent lead)
7. Beige and Green paint on wood wall of North-South Hallway – (18 percent lead)
8. White paint on metal exterior window of Large Office East Center – (18 percent lead)
9. Brown, Green, and Tan paint on plaster wall of Lavatory (Women's) Wash Area – (4.2 percent lead)
10. Beige and Dark Green paint on plaster wall of South Stairwell – (6.7 percent lead)
11. Green and Gray paint on plaster wall of North Open Area – (1.1 percent lead)
12. Tan, White, Silver, and Gray paint on third metal radiator from north wall of North Open Area – (0.43 percent lead)
13. Gray paint on wood exterior window of North Open Area – (4.3 percent lead)
14. Brown and Dark Gray paint on plaster wall of Men's Lavatory Entrance – (0.58 percent lead)
15. Green and Beige paint on metal wall partition of Suite 414, East Office – (0.095 percent lead)
16. Brown Wood Grain Pattern paint on metal wall partition of Main North-South Corridor – (8.9 percent lead)
17. Blue, Brown, and Green paint on plaster wall of Women's Lavatory Entry – (0.63 percent lead)
18. Green paint on metal Newell post in South Stairwell (Landing between 3rd and 4th Floors) – (3.6 percent lead)
19. White, Gray, and Blue paint on metal Garage Beams and Trusses (3rd Column from South End) – (0.90 percent lead)

- F. Lead paint debris that was highly deteriorating was observed throughout the structure. The estimated area of lead-containing paint in the Model T administration building and garage is approximately 200,000 square feet on all painted surfaces, including approximately 26,500 square feet of lead paint debris on floor surfaces that do not contain asbestos floor tiles. Cleanup of lead contamination and debris on floors that also contain ACM floor tiles would be performed during asbestos abatement .

Because this facility is not housing, all painted coatings above the analytical detection limit would be regulated by MIOSHA under the lead-in construction standard, 29 CFR 1926.62 (adopted by rule in Michigan as Part 603). Internal demolition, renovation and/or cleanup activities would be regulated under this rule requiring the use of properly trained personnel and personal exposure monitoring. TCLP testing for lead in the representative debris is required to determine proper disposal. All paint and or coatings that are found during the renovation/demolition activities shall be assumed to be LCP unless appropriate testing is conducted.

G. Related Work Described Elsewhere:

1. Section 13281 – ABATEMENT OF ASBESTOS CONTAINING MATERIALS
2. Section 13284 – PCB BALLASTS AND MERCURY LAMPS
3. Section 13285 – HOUSEHOLD APPLIANCES THAT USE REFRIGERANTS

1.03 REQUIREMENTS

- A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to Work practices, protection of workers, authorized visitors to the site, persons, and property adjacent to the work.
- B. All work shall be performed in strict accordance with all governing codes, rules, and regulations. Where conflicts occur the more stringent requirement shall apply.
- C. Working hours shall be as required and approved by the Owner. The Contractor shall coordinate and schedule all work with the Owner.
- D. Perform lead related work in accordance with the following:
  1. State of Michigan Lead Abatement Act
  2. Occupational Safety and Health Administration (OSHA) 29 CFR 1926.62 Lead in Construction

1.04 DEFINITIONS

- A. Action Level means employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8 hour period.
- B. Area Sampling means sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel (approximately 5 to 6 feet above the floor).
- C. Competent Person (CP) refers to an individual who is trained in the recognition and control of lead hazards in accordance with current Federal, State, and local regulations and has the authority to take prompt corrective actions to control the lead hazard.
- D. Contaminated Room refers to a room for removal of contaminated personal protective equipment (PPE).
- E. Decontamination Shower Facility is a facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.
- F. High Efficiency Particulate Arrestor (HEPA) Filter Equipment (HEPA) means filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated particulate. A high efficiency particulate filter demonstrates at least 99.97 percent efficiency against 0.3 micron or larger size particles.
- H. Lead means metallic lead, inorganic lead compounds, and organic lead soaps. Excludes other forms of organic lead compounds.

- I. Lead Control Area means a system of control methods to prevent the spread of lead dust, paint chips or debris to adjacent areas that may include temporary containment, floor or ground cover protection, physical boundaries, and warning signs to prevent unauthorized entry of personnel. HEPA filtered local exhaust equipment may be used as engineering controls to further reduce personnel exposures or building/outdoor environmental contamination.
- J. Lead Permissible Exposure Limit (PEL) is fifty micrograms per cubic meter of air as an 8 hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a work day, the PEL shall be determined by the following formula:  $PEL \text{ (micrograms/cubic meter of air)} = 400/\text{No. hours worked per day}$
- K. Lead Containing Paint (LCP) means any paint, which contains lead as determined by the testing laboratory using a valid test method. The requirements of this section does not apply if no detectable levels of lead are found using a quantitative method for analyzing paint using laboratory instruments with specified limits of detection (usually 0.01 percent). An X-Ray Fluorescence (XRF) instrument is not considered a valid test method.
- L. Personal Sampling means sampling of airborne lead concentrations within the breathing zone of an employee to determine the 8 hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 6 to 9 inches and centered at the nose or mouth of an employee.
- M. Physical Boundary means an area physically roped or partitioned off around lead control area to limit unauthorized entry of personnel.

#### 1.05 SUBMITTALS

- A. Submit in accordance with Section 01300 - SUBMITTALS.
- B. Pre-work Submittals:
  - 1. Lead Compliance Plan: Submit a detailed job-specific plan of the work procedures to be used in the disturbance of LCP. The plan shall include details of lead control areas, critical barriers, physical boundaries, location and details of decontamination facilities, viewing ports, and mechanical ventilation system (if any). Include a description of equipment and materials, work practices, controls and job responsibilities for each activity from which lead is emitted. Include in the plan, eating, drinking, smoking, hygiene facilities and sanitary procedures, interface of trades, sequencing of lead related work, collected waste water and dust containing lead and debris, air sampling, respirators, personal protective equipment, and a detailed description of the method of containment of the operation to ensure that lead is not released outside of the lead control area. Include site preparation, cleanup and clearance procedures. Include occupational and environmental sampling, training and strategy, sampling and analysis strategy and methodology, frequency of sampling, duration of sampling, and qualifications of sampling personnel in the air sampling portion of the plan. Include a description of arrangements made among contractors on multi-contractor worksites to inform affected employees and to clarify responsibilities to control exposures.
  - 2. Lead Waste Management Plan: The Lead Waste Management Plan shall comply with applicable requirements of Federal, State, and local hazardous waste regulations, shall be signed by the Competent Person, and address the following:

- a. Identification and classification of wastes associated with the work.
  - b. Estimated quantities of wastes to be generated and disposed of.
  - c. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24-hour point of contact.
  - d. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
  - e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
  - f. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.
  - g. Work plan and schedule for waste containment, removal and disposal. Proper containment of the waste includes using acceptable waste containers (e.g., 55-gallon drums) as well as proper marking/labeling of the containers. Wastes shall be cleaned up and containerized daily.
  - h. Include any process that may alter or treat waste rendering a hazardous waste non hazardous.
  - i. Unit cost for hazardous and non-hazardous lead waste disposal according to this plan.
3. Competent Person Documentation: Submit name of the individual who will act as the Contractor's Competent Person. Provide documented construction project-related experience with implementation of OSHA's Lead in Construction standard (29 CFR 1926.62) which shows ability to assess occupational and environmental exposure to lead, experience with the use of respirators, personal protective equipment and other exposure reduction methods to protect employee health.
4. Worker's Training: Submit a certificate for each worker and supervisor, signed and dated by the training provider, stating that the employee has received the required lead training specified in 29 CFR 1926.62.
- C. The following submittals, documentation, and postings shall be maintained on-site by the Contractor during construction activities as defined in this Section:
- 1. Personal air monitoring results
  - 2. Project documents (specifications and drawings)
  - 3. 29 CFR 1926.62
  - 4. Material Safety Data Sheets of supplies/chemicals used on the project
  - 5. Approved Lead Compliance Plan
  - 6. Approved Lead Waste Plan
  - 7. List of emergency telephone numbers
  - 8. Waste Disposal Documents

## 1.06 THIRD-PARTY CONSULTANT

- A. The Owner shall engage the services of a Third Party Consultant who shall serve as the Owner's representative in regard to the performance of the lead work and provide direction as required throughout the entire demolition project period.
- B. The Contractor is required to ensure cooperation of its personnel with the Third-Party Consultant for the air sampling and project monitoring functions described in this section. The Contractor shall comply with all direction given by the Third-Party Consultant's personnel during the course of the work.
- C. The Third-Party Consultant shall staff the project with trained and certified person(s) to act on the Owner's behalf at the job site and help ensure that the lead work is completed per the requirements of all applicable regulations and this section.
  - 1. The Third-Party Consultant shall provide the following services:
    - a. Inspection of the Contractor's work, practices, and procedures, including temporary protection requirements, for compliance with all regulations and project specifications.
    - b. Completion of area air sampling as required. Personal air sampling will be the responsibility of the Contractor.
    - c. Verify daily that all workers used in the performance of the work are properly trained.
    - d. Monitor the progress of the Contractor's work, and report any deviations from the schedule to the Owner.
    - e. Monitor, verify, and document waste load-out operations.
    - f. Ensure that the Contractor is performing personal air monitoring daily, or until a Negative Exposure Assessment is verified, and that results are being returned and posted at the site as required.
    - g. The Third Party Consultant shall maintain a log on site that documents project related actions, activities, and occurrences.
  - 2. The following minimum inspections shall be conducted by the Third Party Consultant. Additional inspections shall be conducted as required by work conditions. Progression from one phase of work to the next by the Contractor is only permitted with the approval of the Third Party Consultant.
    - a. Pre-Construction Inspection: The purpose of this inspection is to verify the existing conditions of the work areas and to document these conditions.
    - b. Pre-Abatement Inspection: The purpose of this inspection is to verify the integrity of each barrier or containment system prior to disturbance of any LCP. This inspection shall take place only after the work area is fully prepped for removal.
    - c. Work Inspection: The purpose of this inspection is to monitor the work practices and procedures employed during removal of LCP and to monitor the continued integrity of the barrier or containment system. Inspections within the removal areas shall be conducted by the Third Party Consultant during all preparation, removal, and cleaning activities.
    - d. Visual Clearance Inspection: The purpose of this inspection is to verify that all materials in the scope of work have been properly removed; no visible

debris/residue remains; no pools of liquid or condensation remains; and all required cleanings are complete.

- e. Post-Clearance Inspection: The purpose of this inspection is to ensure the complete removal of ACM, including debris, from the work area after satisfactory final clearance sampling and removal of all isolation and critical barriers and equipment from the work area.

#### 1.07 CONTRACTOR RESPONSIBILITIES

- A. The Contractor shall remove and stabilize any areas of deteriorated (e.g. loose and flakey) LCP prior to the start of demolition activities.
- B. The Contractor shall designate a full-time Project Supervisor who shall meet the requirements of a "Competent Person" as defined by OSHA 1926.62 and shall have a minimum of one year experience as a supervisor.
- C. The Project Supervisor shall be responsible for the performance of the lead related work and shall represent the Contractor in all respects at the project site. The Supervisor shall be the primary point of contact for the Third Party Consultant. Conduct sampling for lead in accordance with 29 CFR 1926.62 and as specified herein.
- D. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure. Air samples shall be collected on at least twenty-five percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.
- E. Submit results of air samples to the Third Party Consultant within 72 hours after the air samples are taken.
- F. The Contractor shall be responsible for all Toxicity Characteristic Leaching Procedure (TCLP) sampling and laboratory analysis to characterize waste streams prior to disposal. All TCLP results shall be submitted to the Third Party Consultant within 72 hours of receipt.

#### 1.08 PRE-CONSTRUCTION CONFERENCE

- A. Prior to start of preparatory work under this Contract, the Contractor shall attend a pre-construction conference.
- B. Agenda for this conference shall include but not necessarily be limited to:
  - 1. Contractor's Lead Compliance Plan
  - 2. Contractor's Lead Waste Plan
  - 3. Competent Person's duties and functions
  - 4. Contractor's work procedures including:
    - a. Methods of job site preparation and removal methods
    - b. Respiratory protection and Personal Protective Equipment
    - c. Disposal procedures
    - d. Cleanup procedures
    - e. Fire exits and emergency procedures
  - 5. Contractor's plan for twenty-four (24) hour project security

6. Temporary utilities
7. Storage of removed lead wastes or debris.
8. Waste disposal requirements and procedures

#### 1.09 DELIVERY AND STORAGE

- A. Store all materials at the job site in a suitable and designated area.
  1. Store materials subject to deterioration or damage away from wet or damp surfaces and under cover.
  2. Protect materials from unintended contamination and theft.
  3. Storage areas shall be kept clean and organized.
- C. Remove damaged or deteriorated materials from the job site.

#### 1.09 TEMPORARY UTILITIES

- A. Shut down and lock out all electrical power to the lead work areas.
- B. Provide temporary electric service with Ground Fault Circuit Interrupters (GFCI) for all electric requirements within the lead work area.
- C. Provide temporary lighting with "weatherproof" fixtures for all work areas.
- D. Utilize domestic water service from Owner's existing system.

### **PART 2 - PRODUCTS**

#### 2.01 MATERIALS

- A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description, with Material Safety Data Sheets (MSDS) as applicable.
- B. No damaged or deteriorating materials shall be used. If material becomes contaminated the material shall be decontaminated or appropriately disposed of. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.
- C. Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating no less than six (6) mil thickness.
- D. Polyethylene disposable bags shall be no less than six (6) mils thick.
- E. A commercial grade duct tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.
- F. Any ladders, planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable Federal, State and local regulations.

#### 2.02 TOOLS AND EQUIPMENT

- A. The Contractor shall provide tools and equipment that are suitable for lead related activities.
- B. HEPA vacuums shall be leak proof to the filter and conform to AIHA Z9.2 and UL 586.
- C. The Contractor shall notify, in writing, the Owner of any rental equipment in use during work activities that the subject equipment is being used in a LCP project.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION OF WORK AREAS**

- A. **Physical Boundary:** Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that lead will not escape outside of the lead control area.
- B. **Warning Signs:** Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.
- C. **Decontamination Shower Facility:** Provide clean and contaminated change rooms and shower facilities in accordance with 29 CFR 1926.62.
- D. **Eye Wash Station:** Where eyes may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes shall be provided within the work area.
- E. **Personnel Protection:** Personnel shall wear and use protective clothing and equipment as specified herein.
- F. **Prohibited Activities:** Eating, smoking, or drinking or application of cosmetics is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been appropriately trained and provided with protective equipment.

### **3.02 WORK PRACTICES**

- A. **Lead Work:** Perform lead work in accordance with approved Lead Compliance Plan. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead when the work is performed in accordance with 29 CFR 1926.62, and as specified herein. Dispose of all associated lead waste in compliance with Federal, State, and local requirements.
- B. **Removal of Material Containing Lead:**
  - 1. Manual or power sanding or grinding of lead surfaces or materials is not permitted unless tools are equipped with HEPA attachments or wet methods. The dry sanding or grinding of surfaces that contain lead is prohibited.
  - 2. Select lead removal processes to minimize contamination of work areas outside the control area with lead-contaminated dust or other lead-contaminated debris or waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead. Describe this removal process in the Lead Compliance Plan.
  - 3. The worksite preparation (barriers, containments or other methods) shall be job dependent and presented in the Lead Compliance Plan.

### **3.03 CLEANING**

- A. Maintain surfaces within the lead control area free of accumulations of dust and debris.
- B. Restrict the spread of dust and debris; keep waste materials from being distributed over the work area.

- C. Do not dry sweep or use pressurized air to clean up the area.
- D. At the end of each shift and when the lead operation has been completed, clean the controlled area of visible contamination.

#### 3.04 DISPOSAL

- A. All material, whether hazardous or non-hazardous shall be disposed of in accordance with all laws and provisions and all Federal, State, or local regulations.
- B. Contractor is responsible for any waste characterization testing and segregation of waste materials. Ensure all waste is properly characterized prior to disposal.

END OF SECTION

## **SECTION 13284 – PCB AND MERCURY CONTAINING LAMPS**

### **PART 1 - GENERAL**

#### **1.01 GENERAL REQUIREMENTS**

As specified in Section 01001.

#### **1.02 SUMMARY**

- A. The work covered by this section includes the handling and control of materials that may contain polychlorinated biphenyls (PCB) and / or mercury and describes some of the procedures and equipment required to protect workers, the environment and the general public during construction activities.
- B. Furnish all labor, materials, and equipment necessary to carry out the safe removal and disposal of PCB ballasts, mercury-containing light tubes, elevator control panels, thermostats, and waste lubrication oil in compliance with all applicable laws and regulations prior to demolition. The work shall generally include:
  - 1. Approximately 510 PCB light ballasts located throughout unless the ballast has a “No PCB” label
  - 2. Approximately 1,102 suspect mercury containing fluorescent light tubes located throughout
  - 3. Two (2) elevator control panels with suspect mercury
  - 4. Three (3) thermostats with suspect mercury
  - 5. Approximately 8-10 gallons of lubrication oil located in two gear boxes and five containers (1-gallon container and four cans).
- C. The Contractor should verify all quantities and locations.
- D. Related Work Described Elsewhere:
  - 1. Section 13281 – ABATEMENT OF ASBESTOS CONTAINING MATERIALS
  - 2. Section 13282 – SUBSTRATES WITH LEAD CONTAINING PAINT
  - 3. Section 13285 – HOUSEHOLD APPLIANCES THAT USE REFRIGERANTS

#### **1.03 REQUIREMENTS**

- A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to work practices, protection of workers, authorized visitors to the site, persons, and property adjacent to the work.
- B. All work shall be performed in strict accordance with all governing codes, rules, and regulations. Where conflicts occur the more stringent requirement shall apply.
- C. Working hours shall be as required and approved by the Owner. The Contractor shall coordinate and schedule all work with the Owner.

## 1.04 SUBMITTALS

A. Submit in accordance with Section 01300 - SUBMITTALS.

B. Pre-Work Submittals:

1. PCB, Mercury and Waste Lubrication Oil Removal Plan: Submit a detailed job-specific plan of the work procedures to be used in the removal and disposal of PCB and mercury containing materials as well as waste lubrication oil. The plan shall include interface of trades, sequencing of PCB / mercury work, disposal plan, respirators, protective equipment, and emergency procedures.
2. PCB, Mercury and Waste Lubrication Oil Disposal Plan: The PCB, Mercury and Waste Lubrication Oil Disposal Plan shall comply with applicable requirements of federal, state, and local PCB and mercury containing waste regulations and address:
  - a. Identification of PCB and mercury waste as well as waste lubrication oil associated with the work.
  - b. Estimated quantities of waste to be generated and disposed.
  - c. Names and qualifications of each contractor that will be transporting, storing, treating, disposing of the waste. Furnish copies of EPA, state, and local PCB waste permit applications, permits, and EPA Identification numbers for the PCB, mercury and waste lubrication oil disposal.
  - d. Names and qualifications (experience and training) of personnel who will be working on-site with PCB and mercury waste and waste lubrication oil.
  - e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
  - f. Spill prevention, containment, and cleanup contingency measures to be implemented.
  - g. Work plan and schedule for PCB and mercury waste containment, removal and disposal as well as for waste lubrication oil. Waste shall be containerized daily.

C. The following submittals, documentation, and postings shall be maintained on site by the Contractor during construction activities as defined in this Section:

1. Project documents (specifications and drawings)
2. Material Safety Data Sheets of supplies/chemicals used on the project
3. Approved PCB, Mercury and Waste Lubrication Oil Removal Plan
4. Approved PCB, Mercury and Waste Lubrication Oil Disposal Plan
5. List of emergency telephone numbers
6. Waste Disposal Documents

#### 1.05 THIRD-PARTY CONSULTANT

- A. The Owner shall designate an independent Third Party Consultant to perform the responsibilities detailed in this Section.
- B. The Third Party Consultant shall be responsible for the following:
  - 1. Review and approve PCB, Mercury and Waste Lubrication Oil Removal Plan.
  - 2. Review and approve the PCB, Mercury and Waste Lubrication Oil Disposal Plan
  - 3. Inspect during work for conformance with the approved PCB, Mercury and Waste Lubrication Oil Removal Plan.
  - 4. Recommend upgrades or downgrades (whichever is appropriate based on exposure) on the use of PPE (respirators included) and engineering controls.
  - 5. Ensure work is performed in strict accordance with specifications at all times.
  - 6. Certify the conditions of the work as called for elsewhere in this specification.

#### 1.06 PRE-CONSTRUCTION CONFERENCE

- A. Prior to start of preparatory work under this Contract, the Contractor shall attend a pre-construction conference.
- B. Agenda for this conference shall include but not necessarily be limited to:
  - 1. Contractor's PCB, Mercury and Waste Lubrication Oil Removal Plan
  - 2. Contractor's PCB, Mercury and Waste Lubrication Oil Disposal Plan
  - 3. Third Party Consultant's duties and functions
  - 4. Contractor's work procedures including:
    - a. Methods of job site preparation and removal methods
    - b. Respiratory protection and Personal Protective Equipment
    - c. Disposal procedures
    - d. Cleanup procedures
    - e. Fire exits and emergency procedures
  - 5. Contractor's plan for twenty-four (24) hour project security
  - 6. Temporary utilities
  - 7. Storage of removed PCB and mercury wastes or debris and waste lubrication oil.
  - 8. Waste disposal requirements and procedures

#### 1.08 DELIVERY AND STORAGE

- A. Store all materials at the job site in a suitable and designated area.
  - 1. Store materials subject to deterioration or damage away from wet or damp surfaces and under cover.
  - 2. Protect materials from unintended contamination and theft.
  - 3. Storage areas shall be kept clean and organized.

- B. Remove damaged or deteriorated materials from the job site.

#### 1.09 TEMPORARY UTILITIES

- A. Shut down and lock out all electrical power to the work areas.
- B. Provide temporary electric service with Ground Fault Circuit Interrupters (GFCI) for all electric requirements within the work areas.
- C. Provide temporary lighting with "weatherproof" fixtures for all work areas.
- D. Utilize domestic water service from Owner's existing system.

### **PART 2 - PRODUCTS**

#### 2.01 MATERIALS

- A. All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description, with Material Safety Data Sheets (MSDS) as applicable.
- B. No damaged or deteriorating materials shall be used. If material becomes contaminated the material shall be decontaminated or disposed of as PCB or mercury waste or waste lubrication oil material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.
- C. Any ladders, planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable Federal, State and local regulations.

#### 2.02 TOOLS AND EQUIPMENT

- A. The Contractor shall provide tools and equipment that are suitable for PCB and mercury and waste lubrication oil related activities.
- B. The Contractor shall notify, in writing, the Owner of any rental equipment in use during work activities that the subject equipment is being used in a PCB and mercury project.

### **PART 3 - EXECUTION**

#### 3.01 PREPARATION OF WORK AREAS

- A. Establish a PCB, mercury and waste lubrication oil control area by roping off the area to prevent unauthorized entry of personnel. No one will be permitted in the PCB, mercury or waste lubrication oil control area unless the person is provided with appropriate training and protective equipment. Food, drink and smoking materials are prohibited in the designated PCB, mercury and waste lubrication oil control area.
- B. Workers shall wear and use PPE upon entering the work area.

### 3.02 WORK PRACTICES

- A. PCB and Mercury Control Area Requirements: Establish a PCB and mercury control area by roping off the area or providing curtains, portable partitions or other enclosures.
- B. Select PCB and mercury removal procedure to minimize contamination of work areas with PCB, mercury or other PCB-contaminated debris/waste. Handle PCB and mercury such that no skin contact occurs. PCB and mercury removal process shall be described in the work plan.
- C. All light fixtures, elevator control panels, and thermostats shall be de-energized prior to the fixture removal.
- D. Remove mercury containing lamps, panels, and thermostats and package and recycle as specified and in accordance regulatory requirements. Avoid breaking the lamps.
- E. Remove fluorescent light ballasts intact. If the light fixture ballast is leaking and it is not possible or feasible to clean the light fixture, dispose of entire fixture as PCB contaminated material.
- F. Remove waste lubrication oil in a manner to minimize contamination of the work area and such that no skin contact occurs. The waste lubrication oil removal process shall be described in the work plan.

### 3.03 DISPOSAL

- A. All material, whether hazardous or non-hazardous shall be disposed in accordance with all laws and provisions and all Federal, State or local regulations.
- B. PCB, mercury and waste lubrication oil disposal shall comply with requirements and procedures outlined in 40 CFR 761, as required.
- C. Submit the waste disposal manifest and receipts showing acceptance of the material by the approved waste disposal or recycling facility to the Third Party Consultant within 30 days after disposal.

END OF SECTION

## **SECTION 13285 – HOUSEHOLD APPLIANCES THAT USE REFRIGERANTS**

### **PART 1 - GENERAL**

#### **1.01 GENERAL REQUIREMENTS**

As specified in Section 01001.

#### **1.02 SUMMARY**

- A. The work covered by this section includes the safe removal of ozone-depleting refrigerants prior to disposal or recycling in order to protect the environment during construction activities.
- B. Furnish all labor, materials, and equipment necessary to carry out the safe removal and disposal of refrigerators prior to demolition of the buildings. The work shall generally include:
  - 1. Removing ozone-depleting refrigerants from the air conditioning units located throughout and ensure proper disposal.
  - 2. Removing ozone-depleting refrigerants from the drinking fountains located throughout and ensure proper disposal.
- C. The Contractor should verify all quantities and locations.
- D. Related Work Described Elsewhere:
  - 1. Section 13281 – ABATEMENT OF ASBESTOS CONTAINING MATERIALS
  - 2. Section 13282 – SUBSTRATES WITH LEAD CONTAINING PAINT
  - 3. Section 13284 – PCB BALLASTS AND MERCURY LAMPS

#### **1.03 REQUIREMENTS**

- A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local laws, rules, and regulations pertaining to work practices, protection of workers, authorized visitors to the site, persons, and property adjacent to the work.
- B. All work shall be performed in strict accordance with all governing codes, rules, and regulations. Where conflicts occur the more stringent requirement shall apply.
- C. Working hours shall be as required and approved by the Owner. The Contractor shall coordinate and schedule all work with the Owner.

#### **1.04 DEFINITIONS**

- A. EPA Certified Refrigerant Reclaimer: Individual or firm certified by the Environmental Protection Agency (EPA) Reclaimer Certification Program for the recovering and reclaiming of refrigerants in an environmentally friendly manner.
- B. Ozone-Depleting Refrigerants: A refrigerant is a substance used in a heat cycle usually including, for enhanced efficiency, a reversible phase transition from a liquid to a gas. Traditionally, fluorocarbons, especially chlorofluorocarbons, were used as refrigerants, but they are being phased out because of their ozone depletion effects. Other common

refrigerants used in various applications are ammonia, sulfur dioxide, and non-halogenated hydrocarbons such as propane. Many refrigerants are important ozone depleting and global warming inducing compounds that are the focus of worldwide regulatory scrutiny.

## **PART 2 - PRODUCTS**

This section is not in use.

## **PART 3 - EXECUTION**

### **3.01 EPA CERTIFIED REFRIGERANT RECLAIMER**

- A. The Contractor shall employ an EPA certified refrigerant reclaimer to remove the ozone-depleting refrigerants from the household appliances prior to disposal.
- B. The EPA certified refrigerant reclaimer shall be responsible for the following:
  - 1. Remove ozone-depleting refrigerants from air conditioning units and drinking fountains.
  - 2. Provide the Contractor with documentation indicating that all refrigerant was removed from the appliances in accordance with applicable regulations.
  - 3. This statement shall include the contact information for the EPA certified refrigerant reclaimer and the date the refrigerant was removed.

### **3.02 DISPOSAL**

Contractor shall provide a copy of the statement from the EPA certified refrigerant reclaimer to the Third-Party Consultant within 30 days of the refrigerant removal.

END OF SECTION